

I. AMENDMENTS

AMENDMENTS TO THE CLAIMS

Cancel claims 16 and 17 without prejudice to renewal.

Please enter the amendments to claims 1-11, 18, and 19, as shown below.

Please enter new claim 20, as shown below.

1. (Currently amended) An antimicrobial composition, the composition comprising an aqueous solvent and having a divalent cation and a peptide dissolved therein, wherein the divalent cation is added to the solvent such that substantially all of the divalent cation is dissolved in the solvent, wherein the divalent cation is a Ca^{2+} or a Zn^{2+} ion,

and wherein the peptide being is non-glycosylated, has a length of less than about 100 amino acids, and comprises ~~comprising~~ an amino acid sequence selected from the group consisting of:

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala X ~~Ser(P)~~ Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:1); and

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp X ~~Ser(P)~~ Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:2),

wherein amino acid residue X is a phosphoserine residue
~~; and conservative substitutions therein.~~

2. (Currently amended) [[An]] The antimicrobial composition according to claim 1 wherein the peptide has a length of [[is]] less than about 70 amino acids.

3. (Currently amended) [[An]] The antimicrobial composition according to claim 1 wherein the peptide comprises [[an]] the amino acid sequence ~~selected from the group consisting of:~~

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala X ~~Ser(P)~~ Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:1),

wherein amino acid residue X is a phosphoserine residue
~~; and~~

~~Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:2).~~

4. (Currently amended) [[An]] The antimicrobial composition according to claim 1 wherein the peptide comprises an amino acid sequence selected from the group consisting of:

Met Ala Ile Pro Pro Lys Lys Asn Gln Asp Lys Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser Gly Glu Pro Thr Ser Thr Pro Thr Ile Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala X ~~Ser(P)~~ Pro Glu Val Ile Glu Ser Pro Pro

Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO:3);

Met Ala Ile Pro Pro Lys Lys Asn Gln Asp Lys Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala X ~~Ser(P)~~ Gly Glu Pro Thr Ser Thr Pro Thr Ile Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala X ~~Ser(P)~~ Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO:4);

Met Ala Ile Pro Pro Lys Lys Asn Gln Asp Lys Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser Gly Glu Pro Thr Ser Thr Pro Thr Thr Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp X ~~Ser(P)~~ Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO. 5);

Met Ala Ile Pro Pro Lys Lys Asn Gln Asp Lys Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala X ~~Ser(P)~~ Gly Glu Pro Thr Ser Thr Pro Thr Thr Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp X ~~Ser(P)~~ Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO. 6);

Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser Gly Glu Pro Thr Ser Thr Pro Thr Ile Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala X ~~Ser(P)~~ Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO. 7);

Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala X ~~Ser(P)~~ Gly Glu Pro Thr Ser Thr Pro Thr Ile Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala X ~~Ser(P)~~ Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO. 8);

Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser Gly Glu Pro Thr Ser Thr Pro Thr Thr Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp X ~~Ser(P)~~ Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO. 9); and

Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala X ~~Ser(P)~~ Gly Glu Pro Thr Ser Thr Pro Thr Thr Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp X ~~Ser(P)~~ Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO. 10);

wherein amino acid residue X is a phosphoserine residue.

~~and conservative substitutions thereof.~~

5. **(Currently amended)** [[An]] The antimicrobial composition according to claim 4, wherein the divalent cation is a Ca²⁺ ion ~~selected from the group comprising Zn²⁺, Ca²⁺, Cu²⁺, Ni²⁺, Co²⁺, Fe²⁺, Sn²⁺, Mn²⁺, SnF⁺, and CuF⁺.~~

6. **(Currently amended)** [[An]] The antimicrobial composition according to claim 4, wherein the divalent cation is Ca²⁺ ~~or Zn²⁺.~~

7. **(Currently amended)** [[An]] The antimicrobial composition according to claim [[6]] 1 wherein the composition has a molar ratio of the divalent cation to the peptide in the range of 0.5-15.0:1.0.

8. **(Currently amended)** [[An]] The antimicrobial composition according to claim 7 wherein the molar ratio of the divalent cation to the peptide is in the range of 0.5:1.0 to 4.0:1.0.
9. **(Currently amended)** [[An]] The antimicrobial composition according to claim 8 wherein the molar ratio of the divalent cation to the peptide is in the range of 1.0:1.0 to 4.0:1.0.
10. **(Currently amended)** [[An]] The antimicrobial composition according to claim 9 wherein the molar ratio of the divalent cation to the peptide is in the range of 1.0:1.0 to 2.0:1.0.
11. **(Currently amended)** A pharmaceutical composition comprising a composition according to claim [[10]] 1 and a pharmaceutically acceptable carrier.
12. (Previously presented; Withdrawn) A method of treatment, comprising:
administering to a subject a therapeutically effective amount of a formulation comprising a carrier and composition comprising a divalent cation and a peptide, the peptide being non-glycosylated, less than about 100 amino acids, and comprising an amino acid sequence selected from the group consisting of:
Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:1);
and
Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:2),
and conservative substitutions therein; and
allowing the formulation to act on the subject in a manner which prevents a disease selected from the group consisting of dental caries and periodontal disease.
13. (Previously presented; Withdrawn) The method of claim 12, wherein the administering is directly to the teeth or gums of the subject.
14. (Previously presented; Withdrawn) A method of claim 12, wherein the administering is by topical administration.
- 15.-17 (Canceled)
18. **(Currently amended)** An antimicrobial composition according to claim 1 wherein the divalent cation is ~~selected from the group comprising~~ Zn^{2+} , Ca^{2+} , Cu^{2+} , Ni^{2+} , Co^{2+} , Fe^{2+} , Sn^{2+} , Mn^{2+} , SnF^+ , and CuF^+ .

19. **(Currently amended)** An antimicrobial composition according to claim 1 wherein the divalent cation is Ca^{2+} ~~or Zn^{2+}~~ .

20. **(New)** The antimicrobial composition according to claim 1 wherein the peptide comprises the amino acid sequence Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp X Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:2), wherein amino acid residue X is a phosphoseryl residue.